# CLAIMS

1. A manufacturing method of a semiconductor device comprising:

emitting a laser to a semiconductor film over a substrate to form a plurality of regions which are different in scattering intensities of the laser;

emitting a light to the semiconductor film to receive the light reflected on the semiconductor film in a sensor;

obtaining scattering intensities with the reflected light;

detecting the plurality of regions with the scattering intensities; and

conducting a light-exposure so that a position of a light source coincides with an arbitrary region among the plurality of regions.

2. A manufacturing method of a semiconductor device comprising:

emitting a laser to a semiconductor film over a substrate to form a plurality of regions which are different in scattering intensities of the laser;

emitting a light to the semiconductor film to receive the light reflected on the semiconductor film in a sensor;

detecting the plurality of regions with scattering intensities of the reflected light; and

conducting a light-exposure so that a position of a light source coincide with an arbitrary region among the plurality of regions.

3. A manufacturing method of a semiconductor device comprising:

irradiating a laser with a semiconductor film to form a large grain size crystal region and a poorly crystalline region which are different in scattering intensities of the laser;

forming a resist on the semiconductor film;

emitting a light to the semiconductor film through the resist in scanning the semiconductor film to receive the light reflected on the semiconductor film in a sensor;

detecting the large grain size crystal region and the poorly crystalline region

by a contrast of scattering intensities of the reflected light; and

conducting a light-exposure on the large grain size crystal region.

4. A manufacturing method of a semiconductor device according to any one of claims 1 to 3,

wherein a blue light or a light having a wavelength which is shorter than a wavelength of the blue light is used as the light.

5. A manufacturing method of a semiconductor device according to any one of claims 1 to 3,

wherein a laser light or a light emitted from a light emitting diode is used as the light.

6. A manufacturing method of a semiconductor device according to any one of claims 1 to 3,

wherein a position of the light source is controlled at the same time as the light is emitted.

7. A manufacturing method of a semiconductor device according to any one of claims 1 to 3,

wherein any of photo detector of a CCD, a photodiode, a phototransistor, a photo IC, a photomultiplier, or a CMOS sensor is used as the sensor.

8. A manufacturing method of a semiconductor device according to any one of claims 1 to 3,

wherein the light is emitted in a predetermined period, and

wherein the reflected light which is synchronized with the predetermined period is detected.

9. A manufacturing method of a semiconductor device according to any one of

claims 1 to 3,

wherein means for conducting binarization, means for conducting detection of edge with concentration difference, means for conducting sobel processing, means for conducting averaging processing, or means for conducting median processing to data of the reflected light which is received is included.

10. A light-exposure apparatus comprising:

a first light source for emitting a light to an irradiated surface having a plurality of regions which are different in scattering intensities of the light;

a sensor for receiving the light reflected on the irradiated surface;

means for obtaining scattering intensities with the reflected light and detecting the plurality of regions from the scattering intensities; and

a second light source for conducting a light-exposure in accordance with a position of an arbitrary region among the plurality of regions.

11. A light-exposure apparatus comprising:

a first light source for emitting a light to an irradiated surface having a plurality of regions which are different in scattering intensities of the light;

a sensor for receiving a light reflected on the irradiated surface;

means for detecting the plurality of regions with the reflected light; and

a second light source for conducting a light-exposure in accordance with a position of an arbitrary region among the plurality of regions.

12. A light-exposure apparatus comprising:

a first light source for emitting a light to an irradiated surface;

a sensor for receiving the light reflected on the irradiated surface;

a information processor for detecting the irradiated surface with a contrast of scattering intensities of the reflected light; and

a second light source for conducting a light-exposure on a part of the irradiated surface.

13. A light-exposure apparatus according to any one of claims 10 to 12,

wherein the light is a blue light or a light having a wavelength which is shorter than a wavelength of the blue light.

14. A light-exposure apparatus according to any one of claims 10 to 12,

wherein the light is a blue light, a laser having a shorter wavelength than the blue light, or a light emitted from a light emitting diode.

15. A light-exposure apparatus according to any one of claims 10 to 12,

wherein the first light source, the sensor, and the second light source are moved as one unit.

16. A light-exposure apparatus according to any one of claims 10 to 12,

wherein the sensor includes any of photo detectors of a CCD, a photodiode, a phototransistor, a photo IC, a photomultiplier, or a CMOS sensor.

17. A light-exposure apparatus according to any one of claims 10 to 12,

wherein the sensor includes a plurality of photo detectors arranged in a plain shape.

18. A light-exposure apparatus according to any one of claims 10 to 12,

wherein the first light source has means for emitting light in a predetermined period, and

wherein the sensor has means for detecting the reflected light which is synchronized with the predetermined period.

19. A light-exposure apparatus according to any one of claims 10 to 12,

wherein means for conducting binarization, means for conducting detection of edge with concentration difference, means for conducting sobel processing, means for

conducting averaging processing, or means for conducting median processing to data of the reflected light is included.